WHAT IS CLAIMED IS:

1. A device for controlled release of molecules comprising:

(a) a device body having at least one reservoir therein for containing the molecules, said at least one reservoir being formed with a barrier impermeable to the molecules thereby preventing release thereof from said at least one reservoir; and

(b) at least one acoustic transducer being attached to, or forming a part of, said device body, said at least one acoustic transducer being for converting an acoustic signal received thereby into an electrical signal, said electrical signal leading to barrier permeabilization and therefore release of the molecules from said at least one reservoir.

2. The device of claim 1, further comprising a cathode, and an anode, whereas said electrical signal generates an electric potential between said cathode and said anode leading to permeabilization of said barrier and release of the molecules from said at least one reservoir.

3. The device of claim 2, wherein said anode is attached to or forms at least a part of said barrier.

4. The device of claim 2, wherein said electrical signal directly generates said electric potential between said cathode and said anode.

5. The device of claim 2, further comprising a power source for generating said electric potential between said cathode and said anode upon receiving said electrical signal from said at least one acoustic transducer.

6. The device of claim 1, wherein said at least one acoustic transducer serves as an acoustic switch.

7. The device of claim 1, wherein permeabilization of said barrier is effected by at least partial disintegration thereof.

8. The device of claim 1, wherein a type or duration of said electrical signal controls a degree of permeabilization of said barrier and thus an amount of the molecules released.

9. The device of claim 1, wherein the device includes a plurality of reservoirs.

10. The device of claim 9, wherein the device includes a plurality of acoustic transducers.

11. The device of claim 10, wherein each of said plurality of acoustic transducers generates an electrical signal which leads to permeabilization of a barrier of a corresponding reservoir of said plurality of reservoirs.

12. The device of claim 11, wherein each of said plurality of acoustic transducers is capable of converting an acoustic signal of a distinct frequency or frequencies into said electrical signal.

13. The device of claim 9, wherein said plurality of reservoirs are for containing different types of molecules, different amounts of molecules, or combinations thereof.

14. The device of claim 1, wherein the molecules are drug molecules.

15. The device of claim 1, wherein said at least one acoustic transducer includes:

(i) a cell member having a cavity;

(ii) a substantially flexible piezoelectric layer attached to said cell member, said piezoelectric layer having an external surface and an internal surface, said piezoelectric layer featuring such dimensions so as to enable fluctuations thereof at its resonance frequency upon impinging of an external acoustic wave; and

(iii) a first electrode attached to said external surface and a second electrode attached to said internal surface.

16. A device for controlled drug release comprising:

(a) a device body including at least one reservoir being for containing a prodrug form of a drug, said at least one reservoir being formed with a barrier impermeable to said prodrug thereby preventing release thereof from said at least one reservoir; and

(b) at least one acoustic transducer being attached to, or forming a part of said device body, said at least one acoustic transducer being for converting an acoustic signal received thereby into an electrical signal, said electrical signal leading to a conversion of said prodrug into said drug, said drug being capable of traversing said barrier thereby releasing from said at least one reservoir.

17. The device of claim 16, further comprising a cathode, and an anode disposed within said at least one electrode, whereas said electrical signal generates an electric potential between said cathode and said anode leading to said conversion of said prodrug into said drug.

18. The device of claim 16, wherein said anode is attached to or forms at least a part of said barrier.

19. The device of claim 17, wherein said electrical signal directly generates said electric potential between said cathode and said anode.

20. The device of claim 17, further comprising a power source for generating said electric potential between said cathode and said anode upon receiving said electrical signal from said at least one acoustic transducer.

21. The device of claim 16, wherein said at least one acoustic transducer serves as an acoustic switch.

22. The device of claim 16, wherein a type or duration of said electrical signal controls a degree of said conversion and thus an amount of said drug formed and released

23. The device of claim 16, wherein the device includes a plurality of reservoirs.

24. The device of claim 16, wherein the device includes a plurality of acoustic transducers.

25. The device of claim 24, wherein each of said plurality of acoustic transducers generates an electrical signal which leads to said

conversion of said prodrug to said drug contained in a corresponding reservoir of said plurality of reservoirs.

26. The device of claim 25, wherein each of said plurality of acoustic transducers is capable of converting an acoustic signal of a distinct frequency or frequencies into said electrical signal.

27. The device of claim 23, wherein said plurality of reservoirs are for containing different types of prodrugs, different amounts of prodrugs, or combinations thereof.

28. The device of claim 16, wherein said at least one acoustic transducer includes:

(i) a cell member having a cavity;

(ii) a substantially flexible piezoelectric layer attached to said cell member, said piezoelectric layer having an external surface and an internal surface, said piezoelectric layer featuring such dimensions so as to enable fluctuations thereof at its resonance frequency upon impinging of an external acoustic wave; and

(iii) a first electrode attached to said external surface and a second electrode attached to said internal surface.

29. A method of delivering molecules to a specific body region, the method comprising:

(a) implanting within the body region a device including:

(i) a device body having at least one reservoir therein containing the molecules, said at least one reservoir being formed with a barrier impermeable to the molecules thereby preventing release thereof from said at least one reservoir; and

(ii) at least one acoustic transducer being attached to, or forming a part of, said device body, said at least one acoustic transducer being for converting an acoustic signal received thereby into an electrical signal, said electrical signal leading to barrier permeabilization and therefore release of the molecules from said at least one reservoir; and

(b) extracorporeally irradiating the body with an acoustic signal thereby causing the subsequent release of the molecules from said at least one reservoir.

30. The method of claim 29, wherein said device includes a plurality of reservoirs each containing molecules of a specific type and each capable of releasing said molecules upon provision of an acoustic signal of a specific frequency or frequencies, such that a frequency content of said acoustic signal determines a type of said molecules released.

31. The method of claim 29, wherein a frequency content or duration of said acoustic signal controls a degree of permeabilization of said barrier and thus an amount of the molecules released.

32. The method of claim 29, wherein said molecules are drug molecules.

33. The method of claim 29, wherein said device further includes a cathode, and an anode, whereas said electrical signal generates an electric potential between said cathode and said anode leading to permeabilization of said barrier and release of the molecules from said at least one reservoir.

34. The method of claim 33, wherein said anode is attached to or forms at least a part of said barrier.

35. The method of claim 33, wherein said electrical signal directly generates said electric potential between said cathode and said anode.

36. The method of claim 33, wherein said device further includes a power source for generating said electric potential between said cathode and said anode upon receiving said electrical signal from said at least one acoustic transducer.

37. The method of claim 29, wherein said acoustic transducer serves as an acoustic switch.

38. A system for localized delivery of molecules within the body comprising:

(a) an intrabody implantable device including:

(i) a device body having at least one reservoir therein for containing the molecules, said at least one reservoir being

formed with a barrier impermeable to the molecules thereby preventing release thereof from said at least one reservoir; and

(ii) at least one acoustic transducer being attached to, or forming a part of, said device body, said at least one acoustic transducer being for converting an acoustic signal received thereby into an electrical signal, said electrical signal leading to barrier permeabilization and therefore release of the molecules from said at least one reservoir; and

(b) an extracorporeal unit for generating said acoustic signal.

39. A system for localized delivery of molecules within the body comprising:

(a) an intrabody implantable device including:

(i) a device body including at least one reservoir being for containing a prodrug form of a drug, said at least one reservoir being formed with a barrier impermeable to said

prodrug thereby preventing release thereof from said at least one reservoir; and

(ii) at least one acoustic transducer being attached to, or forming a part of said device body, said at least one acoustic transducer being for converting an acoustic signal received thereby into an electrical signal, said electrical signal leading to a conversion of said prodrug into said drug, said drug being capable of traversing said barrier thereby releasing from said at least one reservoir; and

(b) an extracorporeal unit for generating said acoustic signal.

40. A method of fabricating a device for controllable release of molecules, the method comprising:

(a) providing a substrate;

(b) configuring said substrate with at least one reservoir;

(c) capping said at least one reservoir with a cap material which acts as an impermeable barrier to the molecules, said material becoming permeable to the molecules following generation of an

electrical potential in or around said at least one reservoir; and

(d) providing an inlet port for filling said at least on reservoir with the molecules, said inlet being sealable following said filling, thereby generating the device for controllable release of molecules.

41. The method of claim 40, further comprising the step of:

(e) attaching to, or fabricating within, said substrate, at least one acoustic transducer, said at least one acoustic transducer being for generating an electrical signal from an acoustic signal received thereby, said electrical signal leading to generation of said electrical potential in or around said at least one reservoir.

42. The method of claim 41, wherein said at least one acoustic transducer includes:

(i) a cell member having a cavity;

(ii) a substantially flexible piezoelectric layer attached to said cell member, said piezoelectric layer having an external surface and an internal surface, said piezoelectric layer featuring such

dimensions so as to enable fluctuations thereof at its resonance frequency upon impinging of an external acoustic wave; and

(iii) a first electrode attached to said external surface and a second electrode attached to said internal surface.

43. The method of claim 40, wherein step (b) is effected by etching said substrate.